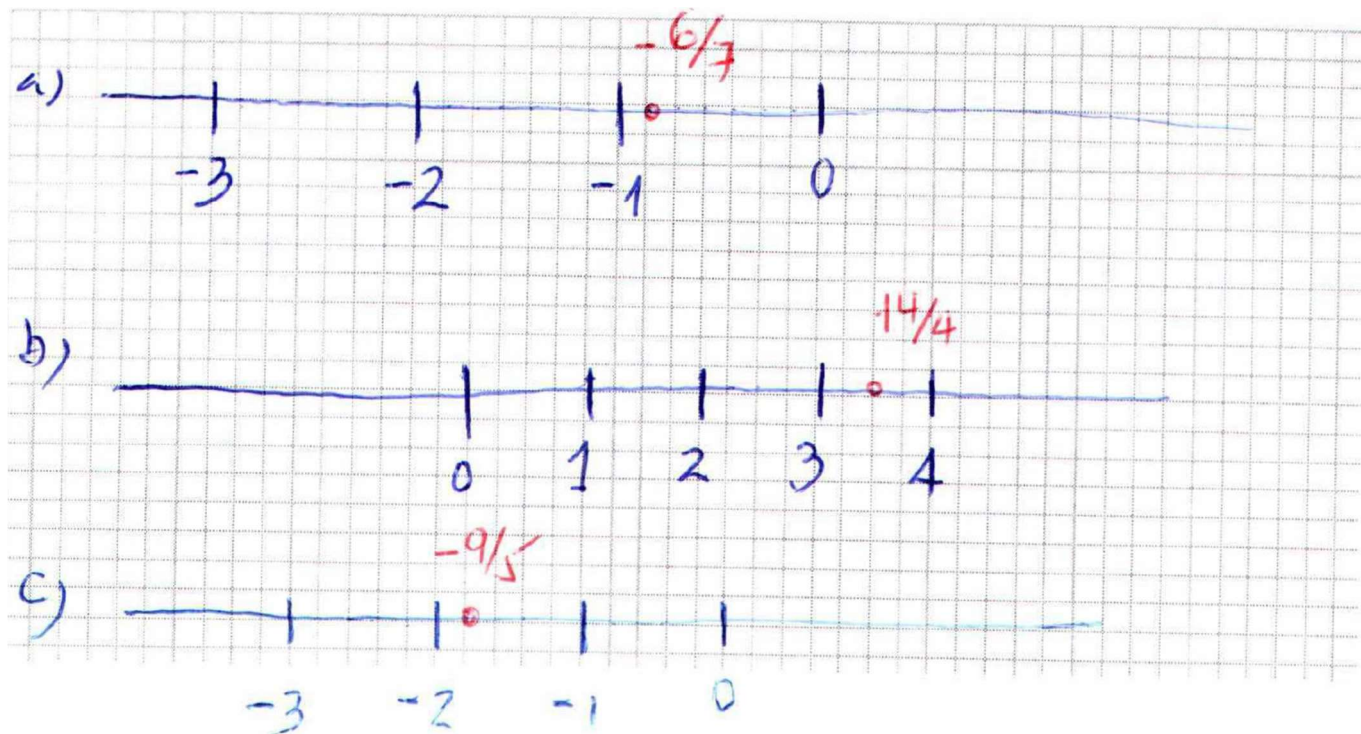


**Lesson 07 and 08: Fractions and fraction operations. BC**

1. Represent the following fractions on the number line: a) $-\frac{6}{7}$; b) $\frac{14}{4}$; c) $-\frac{9}{5}$. You can draw a line for each fraction:



2. Calculate the resulting fraction step by step and get the simplest fraction as result:

$$\left(\frac{-3}{5} \cdot 7 + 4 - \frac{1}{2} \right) : \left(2 - 3 \cdot \frac{3}{5} \right)$$

$$\left(\frac{-21}{5} + 4 - \frac{1}{2} \right) : \left(2 - \frac{9}{5} \right) =$$

$$\left(\frac{-42}{10} + \frac{40}{10} - \frac{5}{10} \right) : \left(\frac{10}{5} - \frac{9}{5} \right) =$$

$$= \left(\frac{-7}{10} \right) : \left(\frac{1}{5} \right) = \boxed{\frac{-35}{10}} = \boxed{\frac{-7}{2}}$$

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3. A family has €1000 of monthly incomes¹ and they spend $\frac{3}{10}$ on food, $\frac{1}{5}$ on clothes, $\frac{1}{10}$ on leisure² and $\frac{1}{4}$ on other expenses. How much do they save³ a year?

$$\frac{3}{10} + \frac{1}{5} + \frac{1}{10} + \frac{1}{4} = \frac{6}{20} + \frac{4}{20} + \frac{2}{20} + \frac{5}{20} = \frac{17}{20} \text{ of expenses.}$$

$$\frac{17}{20} \text{ of } 1000 = \frac{17000}{20} = 850 \text{ € per month}$$

$$\text{So } 1000 - 850 \text{ €} = 150 \text{ € of savings per month}$$

$$\text{So } 150 \cdot 12 = \boxed{1800 \text{ € per year of savings.}}$$

4. A tank 1500 litres of capacity is full of water. We consume $\frac{2}{5}$ the first month and $\frac{1}{3}$ of the rest the next month.

- a) How many litres did we withdraw⁴ in total?
b) What fraction of the deposit do we use in total?

$$\text{a) } \frac{2}{5} \text{ of } 1500 = \frac{3000}{5} = 600 \text{ the first month}$$

$$\text{So, } 1500 - 600 = 900 \text{ l the rest after a month}$$

$$\frac{1}{3} \text{ of } 900 = \frac{900}{3} = 300 \text{ l the second month.}$$

$$\text{So we consume } 600 + 300 = \boxed{900 \text{ l in total}}$$

$$\text{b) } \frac{900}{1500} = \frac{9}{15} = \boxed{\frac{3}{5}}$$

¹ Ingresos.

² Diversión, ocio.

³ Ahorrar

⁴ Extraer



5. Convert these mixed numerals to improper fraction form:

a) $1\frac{7}{11}$ b) $12\frac{6}{10}$

Convert these fractions to mixed numeral form:

c) $\frac{16}{7}$ d) $\frac{56}{9}$

$$a) \quad 1\frac{7}{11} = 1 + \frac{7}{11} = \frac{11}{11} + \frac{7}{11} = \frac{18}{11}$$

$$b) \quad 12\frac{6}{10} = 12 + \frac{6}{10} = \frac{120}{10} + \frac{6}{10} = \frac{126}{10} = \frac{63}{5}$$

$$c) \quad \frac{16}{7} = 2\frac{2}{7}$$

$$\begin{array}{r} 16 \quad 17 \\ 7 \quad 2 \end{array}$$

$$d) \quad \frac{56}{9} = 6\frac{2}{9}$$

$$\begin{array}{r} 56 \quad 19 \\ 9 \quad 6 \end{array}$$

6. a) How do you say two numbers whose sum is equal to zero?

Opposite numbers

b) How to get the decimal value of a fraction?

By dividing the numerator into the denominator.

c) What is a mixed number? Write an example.

A number that has whole part as well as fractional part
 $5 + \frac{1}{3}$

d) What do you have to get before you sum or subtract fractions?

To reduce to common denominator.



7. Get the resulting fraction: $\frac{\frac{3}{5} \cdot (-2)}{4 - \frac{1}{2}} + \frac{-\frac{1}{2}}{\frac{12}{5}} =$

$$\frac{\frac{3}{5} \cdot (-2)}{4 - \frac{1}{2}} + \frac{-\frac{1}{2}}{\frac{12}{5}} = \frac{\frac{-6}{5}}{\frac{8}{2} - \frac{1}{2}} + \frac{-\frac{1}{2}}{\frac{12}{5}} = \frac{-\frac{6}{5}}{\frac{7}{2}} + \frac{-\frac{1}{2}}{\frac{12}{5}} =$$

$$= \frac{-12}{35} + \frac{-5}{24} = \frac{-288}{840} + \frac{-175}{840} = \boxed{\frac{-463}{840}}$$

8. Calculate the decimal value for the following fractions and classify them according to the result. Include the operation to get the decimal expression for each.

a) $\frac{57}{20} =$	b) $\frac{8}{11} =$	c) $\frac{56}{3} =$
a) $\frac{57}{20} = 2'85$ <u>Finite decimal</u>	b) $\frac{8}{11} = 0'72$ <u>Repeating decimal</u>	c) $\frac{56}{3} = 18'6$ <u>Repeating decimal</u>
$\begin{array}{r} 57 \\ 170 \\ 100 \\ 00 \end{array} \quad \begin{array}{r} 120 \\ 2'85 \end{array}$	$\begin{array}{r} 80 \\ 30 \\ 080 \end{array} \quad \begin{array}{r} 11 \\ 0'72... \end{array}$	$\begin{array}{r} 56 \\ 26 \\ 20 \\ 2 \end{array} \quad \begin{array}{r} 13 \\ 18'6... \end{array}$

9. Convert the following decimal numbers into a fraction in simplest form; that is, you must reduce the fraction as much as possible.

a) -2'5; b) 20'4; c) -0'06

$$a) -2'5 = \frac{-25}{10} = \boxed{\frac{-5}{2}}$$

$$b) 20'4 = \frac{204}{10} = \boxed{\frac{102}{5}}$$

$$c) -0'06 = \frac{-6}{100} = \boxed{\frac{-3}{50}}$$

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10. Calculate the following powers: a) $\left(\frac{-2}{7}\right)^3$; b) $\left(\frac{5}{3}\right)^2$

$$a) \left(\frac{-2}{7}\right)^3 = \left(\frac{-2}{7}\right) \cdot \left(\frac{-2}{7}\right) \cdot \left(\frac{-2}{7}\right) = \boxed{\frac{-8}{343}}$$

$$b) \left(\frac{5}{3}\right)^2 = \left(\frac{5}{3}\right) \cdot \left(\frac{5}{3}\right) = \boxed{\frac{25}{9}}$$